CLAIMS

We Claim:

1. A method for dynamically determining costs for links of a network wherein the network has a corresponding set of defined routing factors based on characteristics of the network links and wherein each routing factor has one or more allowable values, said method comprising the steps of:

selecting one or more routing factors from the set of routing factors;

for each selected routing factor, selecting one or more of the allowable values;

prioritizing the selected routing factors;

for each selected routing factor, prioritizing the selected allowable values; and

for any given link in the network:

determining for each selected routing factor which selected allowable value, if any, matches the characteristics of the link;

combining the prioritization of each matched value with the prioritization of that value's corresponding routing factor to determine a cost for each factor; and

summing the combined costs for each selected routing factor to determine the cost for the link.

2. The method of claim 1 further comprising the steps of:

determining a weight for each selected routing factor based on the prioritization of the factor;

for each selected routing factor, determining a cost for each of the selected allowable values based on the prioritization of the values; and

wherein the combining step combines the cost of each matched value with the weight of that value's corresponding routing factor to determine the cost for each factor.

3. The method of claim 2 wherein the step of determining which selected allowable value matches the characteristics of the link further comprises the step of first determining if a given selected routing factor applies to the link and wherein if the factor does not apply, assigning a large cost value for that factor when combining costs and weights

4. The method of claim 2 wherein in the step of determining which selected allowable value matches the characteristics of the link, if no selected allowable value for a given selected routing factor matches the characteristics of the link, using a large cost value for that factor when combining costs and weights.

5. The method of claim 1 wherein said determining, combining, and summing steps are only performed if it is first determined that each of the selected routing factors apply to the given link and if at least one of the selected allowable values for each factor applies to the given link.

6. A method for determining a route through a network comprising a set of links wherein the network has a corresponding set of defined routing factors that are based on the characteristics of the network links and wherein each routing factor has one or more allowable values, said method comprising the steps of:

selecting one or more routing factors from the set of routing factors;

for each selected routing factor, selecting one or more of the allowable values;

assigning a weight to each selected routing factor;

for each selected routing factor, assigning each selected allowable value a cost;

traversing a plurality of links through the network to determine one or more possible routes wherein a given link is only traversed if each of the selected routing factors applies to the link and if at least one of the selected allowable values for each factor applies to the link and wherein a cost is calculated for each traversed link by:

determining for each selected routing factor which selected allowable value matches the characteristics of the traversed link;

for each matched allowable value, weighting the cost of the matched value by the corresponding weight of the routing factor; and

summing the weighted costs to determine a cost for the traversed link; and

using the link costs of the traversed links to select a route from among the one or more determined possible routes.

7. The method of claim 6 wherein the weights assigned to the selected routing factors are based on a prioritization of the factors.

8. The method of claim 6 wherein the costs assigned to the selected allowable values for each selected routing factor are based on a prioritization of the allowable values.

9. The method of claim 6 wherein for at least one of the selected routing values a default value is selected in addition to the selected one or more allowable values, wherein the cost assigning step further assigns a cost to the default value, and wherein the determining step matches the default value to the link if no other selected allowable value matches the characteristics of the link.

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10. A method for determining a route through a network comprising a set of links wherein the network has a corresponding set of defined routing factors that are based on the characteristics of the network links and wherein each routing factor has one or more allowable values, said method comprising the steps of:

selecting one or more routing factors from the set of routing factors;

for each selected routing factor, selecting one or more of the allowable values;

assigning a weight to each selected routing factor;

for each selected routing factor, assigning each selected allowable value a cost;

calculating a cost for each link in the network by:

determining for each selected routing factor which selected allowable value, if any, matches the characteristics of the link;

for each matched allowable value, weighting the cost of the matched value by the corresponding weight of the routing factor; and

summing the weighted costs to determine a cost for the link; and

using the determined link costs to determine the route.

11. The method of claim 10 wherein the determining step further comprises the step of first determining if a given selected routing factor applies to the link and wherein if the factor does not apply, using a large cost value for that factor when calculating the link cost.

12. The method of claim 10 wherein in the determining step, if no selected allowable value for a given selected routing factor matches the characteristics of the link, using a large cost value for that factor when calculating the link cost.

13. The method of claim 10 wherein the weights assigned to the selected routing factors are based on a prioritization of the factors.

14. The method of claim 10 wherein the costs assigned to the selected allowable values for each selected routing factor are based on a prioritization of the allowable values.

15. A network routing system for determining a route through a network of interconnected links, said system including:

routing factors that are based on characteristics of the network links and each of said routing factors having one or more allowable values, one or more of the routing factors being selected and one or more of the allowable values being selected for each of the selected routing factors, with each

selected routing factor being assigned a weight and each selected allowable value being assigned a cost; and

a programmed element for executing a method comprising the steps of:

traversing a plurality of links through the network to determine one or more possible routes wherein a given link is only traversed if each of the selected routing factors applies to the link and if at least one of the selected allowable values for each factor applies to the link;

calculating a cost for each traversed link by:

determining for each selected routing factor which selected allowable value matches the characteristics of the link;

for each matched allowable value, weighting the cost of the matched value by the corresponding weight of the routing factor; and

summing the weighted costs to determine a cost for the link; and

using the link costs of the traversed links to select a route from among the one or more determined possible routes.